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**Abstract of the Disclosure**

In an etching method for etching an etching target film formed on a substrate placed inside an airtight processing chamber 104 by inducing a processing gas into the processing chamber 104, the processing gas contains  $\text{CF}_4$ ,  $\text{N}_2$  and Ar and the etching target film is constituted of an upper organic polysiloxane film and a lower inorganic  $\text{SiO}_2$  film. The flow rate ratio of  $\text{CF}_4$  and  $\text{N}_2$  in the processing gas is essentially set within a range of  $1 \leq (\text{N}_2 \text{ flow rate} / \text{CF}_4 \text{ flow rate}) \leq 4$ . If  $(\text{N}_2 \text{ flow rate} / \text{CF}_4 \text{ flow rate})$  is less than 1, an etching stop occurs and, as a result, deep etching is not achieved. If, on the other hand,  $(\text{N}_2 \text{ flow rate} / \text{CF}_4 \text{ flow rate})$  is larger than 4, bowing tends to occur and, thus, a good etching shape is not achieved. Accordingly, the flow rate ratio of  $\text{CF}_4$  and  $\text{N}_2$  in the processing gas should be set essentially within a range of  $1 \leq (\text{N}_2 \text{ flow rate} / \text{CF}_4 \text{ flow rate}) \leq 4$ , to ensure that improvements in both the selection ratio and the etching shape are achieved.

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